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482

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of)
)
Inventor: Rene Langhans) Examiner: C. Goodman
) Group Art Unit: 3724
For: ROTARY CUTTING UNIT)
)
Serial No.: 08/883,685)
) File No. 2821-193
Filed on: June 27, 1997)

Hartford, Connecticut, May 21, 2001

Commissioner of Patents and Trademarks
Washington, D.C. 20231

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MAY 29 2001

OFFICE OF PETITIONS

APPELLANT'S REPLY TO EXAMINER'S ANSWER

Dear Sir:

In response to the Examiner's Answer mailed March 21, 2001 to Applicant's Appeal Brief, Applicant respectfully submits the following in accordance with the Examiner's responses beginning on page 9 of the Examiner's Answer. The Examiner's objections to the specification

Entered & Considered. Ch. 8/1/02

and drawings have been addressed in a Petition to the Commissioner filed herewith. In view of the relationship between the subject matter which is appealable and petitionable, the Petition to the Commissioner filed herewith is incorporated herein and attached hereto as Exhibit A.

Status of claims

Applicants' claims 1-3, 5-8, 10-12, and 14-21 stand finally rejected by the Examiner for the reasons identified herein.

Re Section 112, First Paragraph, Rejection - Issue 1

Applicants' claims 1-3, 5-8, 10-12, and 14-21 stand rejected under 35 U.S.C. § 112 as containing subject matter not described in the specification in such a way as to enable one skilled in the art to which it pertains to make and use the invention. The Examiner's rejections and responses to Applicant's Appeal Brief are traversed following.

The first and second issues identified by the Examiner, combined herein are the slot for receiving pin wrench 25 and the rejection of claim 1 for the following claim language "means for establishing and adjusting a cutting gap between said two circular blades" (claim 1). A careful reading of the following passage of the specification should help to resolve these issues:

"The cutting gap between the two circular blades 2, 4 is created and adjusted by loosening tightening screws 24 clamping the fine thread flanks of slotted nut 23 against the thread flanks of the displacement bush 13 and by subsequently rotating the displacement bush 13 using pin wrench 25. Rotation of displacement bush 13 is converted by the pitch of the play-free fine thread between the rotating displacement bush 13 and the stationary slotted nut 23 into an adjustment motion as a result of which the cutting gap can be accurately set." (Applicant's specification, page 7, lines 11- 19).

Applicant's claimed "means for establishing and adjusting a cutting gap between said two circular blades" (claim 1) is clearly disclosed as "Rotation of displacement bush 13...is

converted... into an adjustment motion as a result of which the cutting gap can be accurately set" (Spec. page 7, lines 11-13). Applicant's claimed "means for establishing and adjusting a cutting gap between said two circular blades" is the threaded displacement bush 13 and stationary slotted nut 23. Pin wrench 25 and slot for receiving same, in combination, are merely a convenient tool utilized to rotate displacement bush 13. Other methods of rotating the bush 13 could be used, for instance, bush 13 could extend beyond frame 51, such that other types of wrenches or tools could be used to rotate bush 13. The claimed invention is enabled with or without pin wrench 25 and Applicant has not claimed pin wrench 25 or the slot therefor.

The Examiner's refusal to acknowledge that the claimed means for adjusting the cutting gap is not pin wrench 25 and its accompanying slot has accounted for numerous improper claim rejections and objections to amended drawings which are otherwise seemingly trivial amendments as pin wrench 25 and its function are clearly disclosed in the specification and the slot for receiving pin wrench 25 is disclosed in Figure 4 as originally filed. The elongated portion of the slot, that accommodates the throw of pin wrench 25 when in use is inherent to Applicants disclosure. The specification clearly states, "rotating the displacement bush 13 using pin wrench 25"; this statement in conjunction with the Figure 4 wherein pin wrench 25 is shown inserted through the slot therefor, sufficiently disclose both pin wrench 25 and the slot therefor to provide one skilled in the art to make and use the invention. The Examiner fails to acknowledge the specification is directed to one skilled in the art and not to a layman.

Furthermore, pin wrenches and the slots or elongated apertures in machinery and other devices for use therewith are well known prior art devices. As an example, attached hereto as Exhibit B are copies of Stanley Steam Car documents highlighted to show or describe a pin

wrench and use of the slot or opening for receiving it and swinging the wrench. Stanley Steam Cars were first used and offered for sale in the United States nearly one hundred years ago. Also enclosed with Exhibit B is a parts supply house catalog listing pin wrenches.

Applicant respectfully submits that the disclosure of the pin wrench and slot therefor is sufficient in the application and drawings as filed. Applicant points out to the Board the following well established principal of patent law concerning enablement under 35 U.S.C. § 112:

".....In satisfying the enablement requirement, an application need not teach, and preferably omits, that which is well known in the art... How such a teaching is set forth, whether by the use of examples, or broad descriptive terminology, is of no importance since a specification which teaches how to make and use the invention in terms which correspond in scope to the claims must be taken as complying with the first paragraph of 35 USC § 112 unless there is reason to doubt the objective truth of the statements relied upon therein for enabling support." Stahelin v. Secher, 24 USPQ 2d, 1513, 1516 (B.P.A.I. 1992, emphasis added)

Also, as to the Examiner's remarks as to the means for maintaining the cutting gap between the cutting blades. The Applicant respectfully submits that the means to "maintain" the cutting gap between the blades is clearly disclosed as the "tightening screws 24" in the specification. Screws 24 secure the position of displacement bush 13 relative to slotted nut 23 after adjustment.

Applicant requests the Appeal Board to review the rejection and accept the threaded bush 13 and slotted nut 23 as properly disclosed and claimed as "means for adjusting the cutting gap" and reverse the Examiner's rejections of claims 1- 3, 5 - 8, 10 -12, and 14 -21.

Re Section 112, First Paragraph, Rejection - Issue 2

The Examiner in paragraph 8 of the Final Office Action has rejected claims 1-3, 5-8, 10-12, and 14-21 based on 35 U.S.C. § 112, first paragraph as containing subject matter which was

not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

First, the Examiner has stated "the description of how the bush is displaced is confusing." Clearly, as discussed herein above, the bush 13 is clearly disclosed as threadably engaged with slotted nut 23 and the displacement thereof is clearly stated: "Rotation of displacement bush 13 is converted by the pitch of the play-free fine thread between the rotating displacement bush 13 and the stationary slotted nut 23 into an adjustment motion as a result of which the cutting gap can be accurately set." (Specification, page 7, lines 15-19). The Examiner has misinterpreted the means for adjusting the cutting gap as pin wrench 25 rather than the threadably engaged bush 13 with slotted nut 23. The description of the bush displacement is clearly defined in the specification as the "means for establishing and adjusting a cutting gap between said blades." The Examiner's enablement rejection based on the pin wrench and slot therefor is improper and should be withdrawn.

Re: Examiner's Enablement Rejection of claims 8 and 10 based on the Comparison Table, shown on page 8 of Applicant's Specification.

The Examiner has rejected Applicant's claims 8 and 10 based on a 35 U.S.C. § 112, first paragraph enablement rejection by citing the table the Applicant has provided to compare the performance of the claimed invention over the prior art. The Examiner has asserted the following "how the Table could substantiate anything much less the alleged improved cut-edge quality achieved by the invention." The Table identifies the advantages of the claimed invention over the prior art, which lead to the improved cut-edge quality achieved by the use of smaller blade diameters which allow for larger cutting angles. Dependant claims 8 and 10 further limit the device of claim 1 with the additional features of the increased cutting angles enabled by the

patentable configuration of the invention disclosed and claimed. The Examiner is correct in that the Table does not enable anything, but rather compares the performance of the claimed invention with the prior art devices. However, the claimed invention is enabled by the specification and drawings and provides for the use of smaller blade diameters and less cutting force resulting in the advantages identified in the Table listed on page 8 of the specification.

Thus, the Examiner's enablement rejection of Applicant's claims 8 and 10 should be reversed, and this action is respectfully requested.

Re Section 112, Second Paragraph, Rejection - Issue (i)

The Examiner has rejected claims 1-3, 5-8, 10-12, and 14-21 under 35 U.S.C. § 112 second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which Appellant regards as the invention.

The Examiner's rejection is based on the assertion that the Applicant's claim language "means for releasably coupling one of the circular blades of said cutter unit to a driving unit having a motor." (claim 1) is not supported by the original filed application. The Examiner has not supported his rejections of the Applicant's claim with legal principles. In fact well established principles of patent law show that the Examiner's position goes well beyond established patent law requirements of 35 U.S.C, Section 112, second paragraph.

Applicant's specification clearly discloses the drive mechanism as follows:

"Circular cutter unit 14 is driven by a drive shaft 16 with an approximately square cross-section driving a gear 17 with a borehole 22 also of approximate square cross-section. Drive shaft 16 of all the cutter units is driven by a drive unit 30 which includes an electric motor (not separately shown) or any other suitable drive means. Preferably the drive unit is a non-positive drive and is one which is easily detachable from shaft 16 so that the cutter units can be individually removed from the system for adjustment and maintenance." (Specification, page 6, lines 19 - 27, emphasis added)

Clearly, Applicant's disclosure of the well known prior art configuration of an "electric motor or any other suitable drive means" wherein "the drive unit.....is easily detachable from shaft 16" is reasonably disclosed to one skilled in the mechanical art to which this invention relates. The Examiner's conclusion that the claim is indefinite for failing to point out and distinctly claim the subject matter which Appellant regards as the invention is not accurate.

First, Applicant submits the following well established requirements of the patent statute:

The relevant statute, 35 U.S.C., Sec. 112, paragraph 2, (1988) requires that the claims "particularly [point] out and distinctly [claim] the subject matter which the applicant regards as is invention." The operative standard for determining whether this requirement has been met is "whether those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orhtkinetics Inc. v. Safety Travel Chairs, Inc.* 806, F.2d. 1565, 1576, 1 USPQ 2d 1081, 1088 (Fed. Cir. 1986). (emphasis added).

Furthermore, "the second paragraph of section 112 is a requirement for precision and definiteness of claim language. If the scope of subject matter embraced by a claim is clear, and if the applicant has not otherwise indicated that he intends the claim to be of a different scope, then the claim does particularly point out and distinctly claim the subject matter which the applicant regards as his invention....." *In re Borkowski*, 164 USPQ, 642, 645-46 (C.C.P.A., 1970).

In this case the Examiner is rejecting Applicant's above-identified claims based on claim language as follows: "means for releasably coupling" said cutter unit to a drive unit having a motor. Clearly, the applicant's intention is to claim the "detachable" configuration between the drive unit 30 and the drive shaft 16 described in the specification and nothing more. Those skilled in the art would understand exactly what is claimed when the claim is read in light of the

specification. The claim is clear and does distinctly claim that which is the invention. The Examiner's rejection for indefiniteness is improper and should be reversed.

Furthermore, the Examiner has suggested that the coupling is not disclosed in the original application. This is not true, as it is well established that the original-filed claim itself is part of the disclosure. Applicant submits the following: "the original claim in itself is adequate written description of the claimed invention. It was equally a written description whether located among the original claims or in the descriptive part of the specification." *In re Gardner, 178 USPQ 149, 149 (CCPA 1973).*

Also, the specification does describe the "releasable coupling" sufficiently to disclose the well established configuration of a drive unit easily detachable from a drive shaft to one skilled in the art. Seemingly, the Examiner is searching for the specific term "coupler" in the specification. However, Applicant's disclosure sufficiently discloses the releasable coupling arrangement to provide one skilled in the art that which they already possess. The Applicant specifically states the phrases from above: 1) "Drive shaft 16 ...is driven by a drive unit 30"; and, 2) "the drive unit is...easily detachable from shaft 16". The drive shaft being driven by a drive unit, wherein the drive unit is easily detachable from the shaft, discloses a releasable coupler. The word "detachable" on its own discloses a releasable coupler to one skilled in the art in the context of the Applicant's specification. The Examiner's refusal to acknowledge applicant's disclosure of the drive arrangement is misguided. How else could the drive shaft 16 be driven by drive unit 30 without some type of coupler? The coupler is inherent to the drive shaft driven by a detachable drive unit arrangement. The specifics of the well established configuration of a drive unit for driving a shaft need not be specifically disclosed as the Examiner is requiring. The Examiner refuses to acknowledge the specification is directed to one skilled in the mechanical art.

The Examiner's position is not supported and goes beyond well established principals in patent law, for example:

"Adequate description under the first paragraph of 35 U.S.C. 112 does not require literal support for the claimed invention.... Rather, it is sufficient if the originally-filed disclosure would have conveyed to one having ordinary skill in the art that an appellant had possession of the concept of what is claimed." *Ex Parte Parks*, 30 USPQ 2d, 1234, 1236-37 (B.P.A.I 1993).

Also, the releasable coupling arrangement claimed is inherent in the Applicant's disclosure which is sufficient to support the claims as the follows:

"To satisfy the description requirement of section 112, first paragraph, an application must contain sufficient disclosure, expressly or inherently, to make it clear to one skilled in the art that the appellant was in possession of the subject matter claimed...."[A] statement of appellant's invention [specification] which is as broad as appellant's broadest claims" is sufficient to meet this requirement." *In Re Eickmeyer*, 202 USPQ 655, 662 (C.C.P.A. 1979). *(emphasis added)*.

Finally, Applicant's specification describes the function of the claimed elements sufficient to support the means plus function language of the rejected claims pursuant to established patent law principals as follows:

"The applicant is not required to know how or why the invention works, just to adequately explain the technology being claimed. If the claims define elements of the invention using "means plus function" language, then, the description must disclose the function of the elements so claimed." *Mendenhall v. Cedarapids, Inc.* 5 F.3d 1557, 28 USPQ2d. 108 (CAFC 1993). *(emphasis added)*.

As previously held: "a patent applicant is free to recite features of an apparatus either structurally or functionally." *In re Swinehart*, 439 F.2d 210, 212, 169 USPQ 226, 228 (CCPA 1971)

Applicant respectfully refers the Board to the basic patent law enablement principles following:

The specification must "enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same...." (35 USC § 112 first paragraph, with emphasis).

Clearly, the Examiner's position is beyond well established basic patent law principals as to written description and enabling requirements for well known prior art in the field of the invention. Applicant's specification clearly describes the describes to one skilled in the art how to make and use the claimed invention. How the teaching is set forth is of no importance as confirmed by Stahelin v. Secher following:

".....In satisfying the enablement requirement, an application need not teach, and preferably omits, that which is well known in the art... How such a teaching is set forth, whether by the use of examples, or broad descriptive terminology, is of no importance since a specification which teaches how to make and use the invention in terms which correspond in scope to the claims must be taken as complying with the first paragraph of 35 USC § 112 unless there is reason to doubt the objective truth of the statements relied upon therein for enabling support." Stahelin v. Secher, 24 USPQ 2d, 1513, 1516 (B.P.A.I. 1992, emphasis added)

The Examiner's rejection of claims 1-3, 5-8, 10-12, and 14-21 under 35 U.S.C. § 112 second paragraph is not warranted and should be reversed.

Re Section 112, Second Paragraph, Rejection - Issue (ii)

The Examiner's Answer suggests that the Examiner has not evaluated claim 6 as it is written, but rather, from the standpoint of how the Examiner thinks it should be written. The Examiner has concluded that "the rails belong on the overall cutting apparatus, not on the individual cutting units." Applicant's claim 6, as written, claims a cutter unit comprising the guide rail. Both the cutter unit and the guide rails are fully supported in the specification as well

as the use of a guide rail for providing means for displaceable mounting of the cutter unit.

Applicant's claim 6 is directed to a cutter unit further comprising the guide rail for the purpose of displaceable mounting the cutter unit. The Examiner must evaluate the definiteness of the claim as it is and not based on how he thinks it should be written.

Applicant's claim 6 is not indefinite. Whether or not the claim is directed to the subject matter it was intended therefor or that which the Examiner assumes that it should be directed to has no bearing on the definiteness of the scope of the claim. The claim needs to be reviewed as it is written. Is it not possible that the cutter units could each have there own guide rail and when used together they could be staggered in two directions such that the guide rails are parallel. The Examiner has incorrectly assumed that multiple cutter units have to share the same guide rail. Obviously, the Examiner is correct in pointing out that the inventor has disclosed the configuration of multiple cutter units sharing the same guide rail(s). However, the claim 6 is accurate and definite as written and even though it may define an embodiment of the invention other than that which the Examiner believes the Applicant intended to claim, the Examiner's rejection of the claim for indefiniteness is improper and should be reversed.

Re Section 112, Second Paragraph, Rejection - Issue (ii)

The Examiner's rejection of claim 7 for indefiniteness is not warranted. Claim 7 is dependant on claim 1 such that it includes further limitations on the subject matter of claim 1. Specifically claim 7 further limits the following element from claim 1: "means for rotatably supporting said upper... blade shaft" and adds thereto "wherein said upper blade shaft is supported in an axially displaceable bush...". In claim 7 Applicant merely claims the displaceable bush as the means for rotatable support and places the displaceable bush on the upper shaft as opposed to the lower shaft. The claim is easily discernable and definite to one

skilled in the art. Applicant again notes for the board:

The relevant statute, 35 U.S.C., Sec. 112, paragraph 2, (1988) requires that the claims "particularly [point] out and distinctly [claim] the subject matter which the applicant regards as his invention." The operative standard for determining whether this requirement has been met is "whether those skilled in the art would understand what is claimed when the claim is read in light of the specification." Orthokinetics Inc. v. Safety Travel Chairs, Inc. 806, F.2d. 1565, 1576, 1 USPQ 2d 1081, 1088 (Fed. Cir. 1986).

It is not the function of the claim to disclose the invention, but to point out the features of novelty in the invention as disclosed in the specification and the drawings.

Applicant submits that claim 7 as written is definite in view of the specification and drawings and should be allowed.

Re Section 112, Second Paragraph, Rejection - Issue (iv)

The Examiner's Answer clearly identifies the Examiner's refusal to accept that the fact that the specification is not written for a laymen, but is directed to one skilled in the art to which the subject matter of the invention pertains.

"Adequate description under the first paragraph of 35 U.S.C. 112 does not require literal support for the claimed invention.... Rather, it is sufficient if the originally-filed disclosure would have conveyed to one having ordinary skill in the art that an appellant had possession of the concept of what is claimed." Ex Parte Parks, 30 USPQ 2d, 1234, 1236-37 (B.P.A.I 1993).

The Examiner's remark "how will one skilled in the art [be] able to discern exactly how the cutting angle is defined" clearly supports the Applicant's position that in this instance and throughout the prosecution of this application, the Examiner refuses to acknowledge that fact that the disclosure and claims are directed to one skilled in the art. In this case, the specification clearly states, page 1, beginning on line 5, " This invention relates to a circular cutter unit to cut flat lengths of materials, particularly sheet metals and especially to equipment to cut flat lengths

using several cutting units." Also, one page 2, line 21, Applicant referring to prior art states: "Because the shaft diameters are large, the blade diameters also must be large, and as a result the blades evince an unfavorable, fairly shallow angle of cutting and hence generate untidy cut edges." Obviously, the Applicant is not changing the usual meaning of the term cutting angle and therefore it is reasonable to assume one skilled in the art knows that the cutting angle is the angle of the cut. As to how to measure the cutting angle, the angles 64 in the Table on page 8 are illustrated in Figures 5 and 6. Again, applicant is not required to provide a detailed discussion of elementary geometry as if the specification is directed to a layman. Clearly, one skilled in the art possesses the knowledge that the cutting angle is an angular measurement from a vertical line perpendicular to the cut.

Also, the cutting angle is clearly defined in the Amendment of November 20, 1997 wherein The Examiner's remark clearly shows his refusal to accept that which is already possessed by one skilled in the art. In this case, the sheet metal, cutting blade, cutting time, cutting angle, blade diameter, all are examples of things which one can reasonably assume a person skilled in the art is knowledgeable thereof.

The Examiner's Answer clearly acknowledges his failure to read the specification and claims as one skilled in the art. Claim 10 is definite and enabled by the Applicant's disclosure and should be allowed.

Re Section 112, Second Paragraph, Rejection - Issue (v)

Applicant's amendment After Final Rejection includes amendments to claims 12 and 17 to include language to clarify the claim language as to the "horizontal plane"; The Examiner has now entered the Amendment After Final. Thus this issue is moot and Applicant's claims 12 and 17 should be allowable.

Re Section 102 (b) Rejection based on U.S. Pat. No. 4,116,908 to Suzuki et al.

The Examiner's rejection of Applicant's claim 1 is improper based on established requirements of anticipation, defined as follows:

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claims*.
Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added).

First, as to the claimed U-shaped frame 5 of Applicant's claimed invention being anticipated by the Suzuki reference; Applicant's U-shaped frame is arranged very different from the frame used in the Suzuki device. In the claimed invention the U-shaped frame is one piece with two legs 51 and 52 integral thereto. The U-shaped frame of the claimed invention allows the cut material to split the U such that the flat yoke which represents the bottom leg 52 of the U supports the material on one side after the cutting procedure. The Examiner's contention that the Suzuki reference also is U-shaped is not accurate, in fact, the Suzuki device discloses a frame having two distinct and separate portions. The Suzuki device would not function arranged with a U-shaped frame as the cut material must pass the end of the frame and the Suzuki device is arranged such that an upper portion of the frame is exactly above a lower portion. Applicant's claimed U-shaped frame is one piece and is not anticipated by the two piece frame disclosed in the Suzuki reference.

Thus, the Examiner's rejection of Applicant's claim 1 based on anticipation by the Suzuki reference is not accurate as Applicant's claim 1 includes a U-shaped frame not disclosed by the Suzuki reference.

Secondly, as to the "means for releasably coupling" as claimed and rejected by the Examiner as anticipated by the Suzuki reference; The Examiner's contention that none of the

claims 1, 18 and 21 require a single drive shaft is irrelevant. Applicant's claim 1 clearly states: "means for releasably coupling one of the circular blades of said cutter unit to a driving unit having a motor.", (emphasis added) and a non-positive drive for the second blade. Clearly the language of the claim limits the motor to be coupled to one of the circular blades for direct drive and a non-positive drive for the second blade. This arrangement is not anticipated by the Suzuki reference as the Suzuki device has a separate motor for each blade and does not disclose the non-positive drive of the second blade as in the claimed invention. The Examiner's anticipation reference based on the Suzuki reference as to Applicant's claim of a single drive unit is improper and should be reversed.

Third, the Examiner has rejected claims 1, 18, and 21, based on the claimed feature of the non-positive drive for the second blade in the Applicant's claimed device. The applicant's device provides transport rings positioned to engage the material such that the upper cutter blade in the applicant's device is frictionally driven by the material being cut. First, the Suzuki reference discloses a drive unit attached directly to the shafts for each cutting blade such that the friction drive arrangement as used by the Applicant's second cutting blade is not anticipated nor disclosed.

Furthermore the "disk-like roll members" the Examiner has identified in the Suzuki reference are positioned to be aligned with the shearing tools, rather than the uncut material as in Applicant's claimed invention such that they will not function to provide a non-positive drive for the second cutting blade in the Suzuki device. As stated in the Suzuki specification, col. 9 line 16, 17: "The disk-like roll member is so arranged as to vertically align with the lower shearing tool 19." Thus, the Examiner's assertion that the disk-like roll members inherently anticipate Applicant's non-positive drive is not accurate. The disk-like roll members do not "inherently"

provide frictional drive to the material being cut as the Examiner has asserted. The Suzuki reference does not anticipate the non-positive drive arrangement for the second cutting blade as disclosed and claimed by Applicant's claims 1, 18, and 21, therefore, the Examiner's rejection thereof is improper and should be reversed.

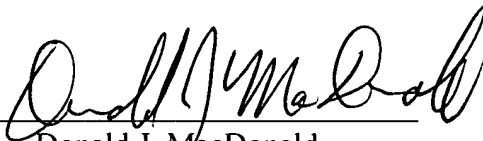
CONCLUSION

In view of the foregoing, Applicant respectfully submits that the a careful reading of the specification and the drawings will show that the Applicant's claimed invention is patentably distinguishable over the prior art and the Examiner's rejections are unsupported by the law referred to herein. Accordingly, Appellant respectfully requests the Board to reverse the Examiner's above-identified rejections and allow Applicant's claims 1-21. Applicant submits herewith a Request For Oral Hearing.

If fees are due in conjunction with this filing or if an overpayment has been made, please debit or credit deposit account No. 13-0235 accordingly.

Respectfully submitted,

By



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In the Application of)

Inventor: Rene Langhans)

) Examiner: C. Goodman

For: ROTARY CUTTING UNIT)

) Group Art Unit: 3724

Serial No.: 08/883,685)

) File No. 2821-193

Filed on: June 27, 1997)

Hartford, Connecticut, May 21, 2001

Commissioner of Patents and Trademarks
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OFFICE OF PETITIONS

PETITION TO THE COMMISSIONER

Dear Sir:

In response to the Examiner's Answer mailed March 21, 2001 to Applicant's Appeal

Brief, Applicant submits this Petition pursuant to 37 C.F.R. §1.181 and §1.193 for

reconsideration of the Examiner's objections to the above-identified application for the reasons set forth herein.

INTRODUCTION

Briefly described, the present invention is directed to a circular cutter unit for equipment for cutting flat lengths of material such as sheet metal in a horizontal plane. The cutter includes upper and lower circular blades, wherein both blades lie in planes perpendicular to the horizontal plane and are in a longitudinal direction. The upper and lower circular blades are supported by upper and lower blade shafts, respectively, which are parallel with the horizontal plane and perpendicular to the longitudinal direction, both blade shafts being rotatably and rigidly affixed in a common frame. The frame having a substantially U-shape with upper and lower legs connected by a flat yoke intersecting the horizontal plane at an acute angle. A cutting gap between the circular blades is established and adjusted by loosening tightening screws and rotating a displacement bush using a pin wrench. A slot in the frame is provided for receiving the pin wrench. The cutter unit is provided with a releasably coupled driving unit having a motor connected to the lower blade, the upper blade being driven by way of the lower blade.

In a Final Office Action, the Examiner objected to the specification and drawings for the informalities and reasons set forth below. Applicant has submitted an Amendment After Final Rejection which included amendments to Figures 1 and 2 of the application in an attempt to comply with the Examiner's objections and to narrow the issues for purposes of appeal. The Examiner denied entry of the Amendment After Final Rejection citing new matter in the amendments to Figures 1 and 2. Applicant contends that no new matter is included, and the amended Figures 1 and 2 should be entered as a matter of right.

Applicant hereby petitions the Commissioner to review the Examiner's objections to the

above-identified application and the arguments set forth herein and instruct the Examiner to enter the Amendment After Final Rejection filed February 8, 2001.

STATEMENT OF FACTS

1) Examiner has refused to enter amended FIGS. 1 and 2 included with Amendment After Final Rejection filed January 8, 2001 citing the inclusion of new matter in the Advisory Action mailed March 21, 2001. (A copy of the Letter To Official Draftsman submitted with Applicant's Amendment After Final Rejection is attached hereto as Exhibit A, the amendments are identified in red pen just as those submitted.)

2) Referring to Final Office Action, mailed March 8, 2000 the Examiner's objections are quoted as follows :

OBJECTIONS TO THE SPECIFICATION

OBJECTION No. 1: The specification is objected to because of the following: In the specification, "P. 5, line 24, the phrase "... subtending an acute angle α of about 10°" is not clearly understood. Where is this angle shown in the drawings? Appropriate correction is required."

OBJECTIONS TO THE DRAWINGS

OBJECTION No. 2: "The drawings are objected to because references "26" and "27" should be interchanged to maintain consistency with the depiction in FIG. 1. Correction is required."

OBJECTION No. 3: "The drawings are objected to under 37 C.F.R. 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore the "means for releasably coupling" (claim 1, first occurrence) must be shown or the feature(s) cancelled from the claim(s). No new matter should be entered."

OBJECTION No. 4: "The drawings are objected to as failing to comply with 37 CFR. 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "α" (Page 5, line 24). Correction is required.

3) Applicant attempted to resolve the Examiner's objections set forth in the Final Office Action by including with the Amendment After Final Rejection amended Figures 1 and 2 in the application. A description of the amendments to the drawings with respect to the above-identified objections are:

OBJECTIONS 1 and 4: Angle α identified in the specification but not shown in the drawings (See specification, Page 5, line 24);

APPLICANT'S AMENDMENT: Figure 2 was amended by adding the symbol "α" and appropriate lead lines;

OBJECTION 2: Examiner objects to reference numerals "26" and "27" in Figure 1 which should be interchanged.

APPLICANT'S AMENDMENT: Figure 1 was amended by interchanging reference numerals "26" and "27".

ADDITIONAL AMENDMENT: Figure 1 was amended to include the slot for receiving pin wrench 25. (The slot for receiving pin wrench 25 was included in the original application in Fig. 4 as described below in paragraph 4.)

4) Figure 4 as filed with the original application shows the slot for receiving pin wrench 25; Figure 4 is a cross-sectional view of the cutter unit and clearly shows the slot for receiving pin wrench 25 as the spaces between the vertical lines in frame 51 shown spaced apart from and parallel to the outer diameters of pin wrench 25. In Figure 4, the slot for receiving pin wrench 25 although correctly drawn and clearly shown is not labeled with a reference number. Pin wrench 25 in Figure 4 is shown as positioned in the slot to adjust the cutting gap between the circular

blades.

5) Pin wrenches and the slots or elongated apertures in machinery and other devices for use therewith are well known prior art devices as shown in the copies of the Stanley Steam Car documents attached hereto as Exhibit B; Stanley Steam Cars were first used and offered for sale in the United States nearly one hundred years ago.

6) The above-identified objections were previously asserted by the Examiner in the Office Action mailed March 1, 1999.

7) Applicant, in an earlier attempt to resolve the above-identified objections, filed a timely response to the Office Action mailed March 1, 1999 and included therewith amended Figures 1 and 2 (attached hereto as Exhibit C is a copy of the Letter to Official Draftsman and amended Figures 1 and 2 as submitted with the changes identified in red) wherein the only amendments were the following:

- a) Figure 2 was amended by adding the symbol " α " and appropriate lead lines to identify the angle α the drawings;
- b) Reference numbers "26" and "27" were interchanged as the mistake was correctly identified by the Examiner;
- c) The labeling for the box diagram for drive unit 30 was amended by adding the word "DETACHABLE"; and
- d) An additional proposed new figure was included for the Examiner's review in an attempt to clarify the method of using a pin wrench as applicable to the present invention. Applicant clearly stated in the Response to the Office Action mailed March 1, 1999 that the additional figure was only proposed. The new figure was labeled "PROPOSED NEW FIGURE".

8) The Examiner in the Final Office Action refused to enter the amended drawings filed

with the Response To Office Action mailed March 1, 1999 without elaboration; Identical objections to the drawings were made in the Final Office Action without a specific explanation therefor.

9) The Examiner acknowledged the existence of the slot for receiving pin wrench 25 as shown in Figure 4 in the personal interview held April 20, 2000. The content of the interview of April 20, 2000 is noted in the Statement of the Substance of the Interview as filed on May 4, 2000.

10) The Examiner also clearly understands the function and purpose of the pin wrench as can be ascertained from his comments in the Office Action dated March 8, 2000.

POINTS TO BE REVIEWED

Applicant's proper disclosure of the following elements:

1) The angle α at the intersection of the flat yoke and the horizontal plane defined by the flat sheet of material to be cut.

2) "Means for releasably coupling" drive unit 30;

3) The slot for receiving pin wrench 25; and

4) The adjustability of displacement bush 13 for adjusting the cutting gap between circular blades 2 and 4 and means therefor.

5) The features included in Applicant's proposed new figure, attached hereto as Exhibit D.

ACTIONS REQUESTED

Entry of Applicant's amendments to Figures 1 and 2 identified below:

a) Identification of the angle α in Figure 2;

- b) Interchanging reference numerals "26" and "27" in Figure 1;
- c) Addition of the word "DETACHABLE" in the identification of the block diagram representing drive unit 30 in Figure 1;
- d) Addition of the slot for receiving pin wrench 25 in Figure 1;
- e) Entry of Applicant's proposed new figure as Figure 5 in the application; The proposed new figure is attached hereto as Exhibit D; and
- f) Withdrawal of the Examiner's objections to the application identified in the Final Office Action dated March 2, 2001.

ARGUMENT

Following is a discussion of each of the numbered issues identified above under the heading Points To Be Reviewed:

1) Applicants' disclosure of the angle α at the intersection of the flat yoke and the horizontal plane defined by the flat sheet of material to be cut.

Referring to Applicants original application as amended by Preliminary Amendment filed November 20, 1997, page 5 lines 23-25, states in part:

"The upper leg 51 and lower leg 52 of frame 5 are joined by a flat yoke 53 subtending an acute angle α of about 10° with the horizontal plane 10 and can lie in a range of 8° to 12° , preferably 9° to 11° ."

There is only one upper leg 51, one lower leg 52 and one flat yoke 53 joining legs 51 and 52 in Figures 1 and 2 of the application. Each leg and the yoke is labeled with a corresponding reference number. The reference to the acute angle α in the specification is believed to be clear and unambiguous. A careful reading of the above-identified passage of the specification in conjunction with a review of Figure 1 or Figure 2 as originally filed clearly shows the angle α . It

is well established that the angular relationship between two intersecting planes is defined by the angle subtended by lines in the planes extending perpendicular to the intersection of the two planes.

The Examiner's request to label angle α on the drawings is reasonable and Applicant has amended Figure 1 accordingly in the Amendment After Final Rejection filed February 28, 2001. The objection should be withdrawn and the amendment entered.

2) Applicant's disclosure of the "means for releasably coupling" of drive unit 30.

Referring to Applicants original application, page 6 lines 19-27 read as follows:

"Circular cutter unit 14 is driven by a drive shaft 16 with an approximately square cross-section driving a gear 17 with a borehole 22 also of approximately square cross-section. Drive shaft 16 of all of the cutter units is driven by a drive unit 30 which includes an electric motor (not separately shown) or any other suitable drive means. Preferably the drive unit is a non-positive drive and one which is easily detachable from shaft 16 so that the cutter units can be individually removed from the system for adjustment and maintenance. "

Clearly, the claimed element "means for releasably coupling" the drive unit is sufficiently defined in the specification and is well established prior art. Applicant's above-identified disclosure states in part: "drive shaft 16 with an approximately square cross-section....", and continues "Drive shaft 16.... driven by a drive unit 30 which includes an electric motor or any other suitable drive means." Also, "Preferably the drive unit is easily detachable from shaft 16...." (emphasis added).

Applicant submits the following well established principle of patent law:

"[The specification] need only be reasonable with respect to the art involved; They [applicant] need not inform the layman nor disclose what the skilled already possess. They [applicant] need not describe the

conventional....The intricacies need not be disclosed ad absurdum." General Electric Co. v. Brenner, 159 USPQ 335, 337 (D.C. Cir. 1968).

The question raised is whether the scope of enablement, provided one of ordinary skill in the art by the disclosure, is commensurate with the scope of protection sought by the claims. Applicant's claim language of "means for releasably coupling" found in the original claims is clearly disclosed in the specification sufficiently to provide one skilled in the art with the well established drive shaft, motor, coupler arrangement used by the applicant in the claimed invention. The disclosure of a drive shaft driven by a drive unit, which includes an electric motor, wherein the drive unit is preferably easily detachable from the shaft, more than reasonably discloses to one skilled in the art the well established prior art configuration of a drive unit coupled to a drive shaft for powering a machine.

Applicant respectfully notes the following law on the enablement requirement of 35 U.S.C. § 112 (1) and the preferred omission of detail for the well known:

"..... In satisfying the enablement requirement, an application need not teach, and preferably omits, that which is well known in the art... How such a teaching is set forth, whether by the use of examples, or broad descriptive terminology, is of no importance since a specification which teaches how to make and use the invention in terms which correspond in scope to the claims must be taken as complying with the first paragraph of 35 USC § 112 unless there is reason to doubt the objective truth of the statements relied upon therein for enabling support." Stahelin v. Secher, 24 USPQ 2d, 1513, 1516 (B.P.A.I. 1992, emphasis added)

Applicant contends the claim language "means for releasably coupling" drive unit 30, is clearly well established prior art and sufficiently disclosed and enabled in the section of applicant's specification quoted on page 6 above. Thus, the Examiner's rejection thereof is not warranted and should be withdrawn.

3) and 4) Disclosure of the slot for receiving pin wrench 25 and adjustable displacement bush 13 for adjusting the cutting gap between circular blades 2 and 4;

The Examiner has objected in the Final Office Action dated March 8, 2000 to Applicant's amendment to Figure 1 to include the slot for receiving pin wrench 25 and states that the slot was not previously shown. Figure 4 as originally filed clearly shows both pin wrench 25 and the slot for receiving pin wrench 25. Figure 4 shows pin wrench 25 in the position as used; that is within the slot for receiving the pin wrench 25. Applicant's amendment to Figure 1, or in the proposed Figure 5, both include the longitudinal section of the slot for receiving pin wrench 25, previously disclosed in Figure 4, does not constitute the entry of new matter.

The Examiner's comments on page 4, line 6 of the Final Office Action mailed March 8, 2000, also, indicate he correctly understands the movements of the pin wrench and accommodation of the elongated slot therefor.

Applicant clearly discloses the means and method of adjusting the cutting gap between the cutting blades 2 and 4. The threaded displacement bush 13, tightening screws 24, stationary slotted nut 23, and pin wrench 25 are clearly identified and disclosed in the specification as follows:

"The cutting gap between the two circular blades 2, 4 is created and adjusted by loosening tightening screws 24 clamping the fine thread flanks of slotted nut 23 against the thread flanks of the displacement bush 13 and by subsequently rotating the displacement bush 13 using pin wrench 25 . Rotation of displacement bush 13 is converted by the pitch of the play-free fine thread between the rotating displacement bush 13 and the stationary slotted nut 23 into an adjustment motion as a result of which the cutting gap can be accurately set." (Applicant's specification, page 7, lines 11- 19).

Figure 4 as originally filed shows the slot for receiving pin wrench 25; Figure 4 is a cross-sectional view of the cutter unit and clearly shows the slot for receiving pin wrench 25 as the spaces between the vertical lines in frame 51 shown spaced apart and parallel to the outer diameter of pin wrench 25. In Figure 4, the slot for receiving pin wrench 25 although correctly drawn and clearly shown is not labeled with a reference number. Pin wrench 25 in Figure 4 is shown as positioned in the slot as used to adjust the cutting gap between the circular blades. Pin wrench 25 is intended to be removed following the blade adjustment.

Furthermore, pin wrenches and the slots or elongated apertures in machinery and other devices for use therewith are well known prior art devices. As an example, attached hereto as Exhibit B are copies of Stanley Steam Car documents highlighted to show or describe a pin wrench and use of the slot or opening for receiving it and swinging the wrench. Stanley Steam Cars were first used and offered for sale in the United States nearly one hundred years ago. Also enclosed as Exhibit C is a parts supply house catalog listing pin wrenches.

Applicant again refers to the well established principals of patent law cited above in General Electric Co. v. Brenner and Stahelin v. Secher , wherein it is very clear that the applicant "need not teach and preferably omits that which is well known in the art."

Apparently the cause of the Examiner's confusion is that the slot for receiving pin wrench 25 is shown in a cross-sectional view such that the elongated portion of the slot, that which is necessary to accommodate the throw of pin wrench 25, can not be clearly identified when viewing Fig. 4. However, the slot is clearly shown and correctly drawn on Fig. 4 and the Applicant should be allowed to transfer the slot to Fig. 1 even though the same slot when transferred to Fig. 1 may look differently to one not familiar with basic drafting principles. The

Examiner's new matter rejection of Applicant's amendment to Figure 1 to include the slot for receiving pin wrench 25 is improper and should be withdrawn.

5) Entry of Applicant's Proposed New Figure

Applicant's proposed new Figure 5 (attached hereto as Exhibit D) should also be entered in the application. The proposed new figure is merely a detailed cross-sectional drawing of the displacement bush 13 within the frame 51 and the pin wrench 25 shown interior to the slot for receiving the pin wrench. Each element shown in the proposed new figure is disclosed in the original specification. Applicant's proposed new figure was drawn specifically to clarify the Examiner's understanding of the use of pin wrench 25 to adjust the cutting gap between cutting blades 2 and 4. The Examiner rejected the proposed new figure citing new matter. Again, apparently the cause of the confusion may be that the new figure shows the slot for receiving pin wrench 25 in a view perpendicular to Figure 4 and it appears different to the Examiner. However, Applicant's new figure does not include new matter. The detailed drawing to visualize the arrangement disclosed may be helpful for the Examiner and the Applicant has complied by producing the new figure. Applicant now requests the Commissioner to instruct the Examiner to enter the new figure in the application as matter well known to those skilled in the art.


CONCLUSION

In view of the foregoing, Applicant respectfully submits that a careful reading of the specification and the drawings shows that the Applicant's amendments in response to the Examiner's objections in the Final Office Action do not introduce new matter and should be entered to narrow the issues for purposes of appeal.

Accordingly, Appellant respectfully requests the Commissioner to enter Applicant's Amendment After Final Rejection as well as the proposed new drawing identified above.

A check in the amount of \$130.00 to cover the fee for filing this Petition is enclosed herewith. If additional fees are due in conjunction with this filing or if an overpayment has been made, please debit or credit deposit account No. 13-0235 accordingly.

Respectfully submitted,

By 

Donald J. MacDonald
Registration No. 42,823
Attorney for Applicant

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of)	
René Langhans)	Examiner: C. Goodman
on ROTARY CUTTING UNIT)	Group Art Unit No.: 3724
Serial No.: 08/883,685)	
Filed On: June 27, 1997)	(Our Docket No. 2821-193)

Hartford, Connecticut, January 8, 2001

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LETTER TO OFFICIAL DRAFTSMAN

Sir:

In response to paragraph 4 - 6 of the Office Action dated March 8, 2000, revised informal Figures 1 and 2 are enclosed which identify angle α and switch the references to components 26 and 27. The labeling for drive unit 30 has been changed by adding the word "detachable," and a slot for the pin wrench has been added to the cutter frame 51. The changes are marked in red. No new matter has been added to the drawings by this revision.

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Respectfully submitted,

By 
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Fig. 1

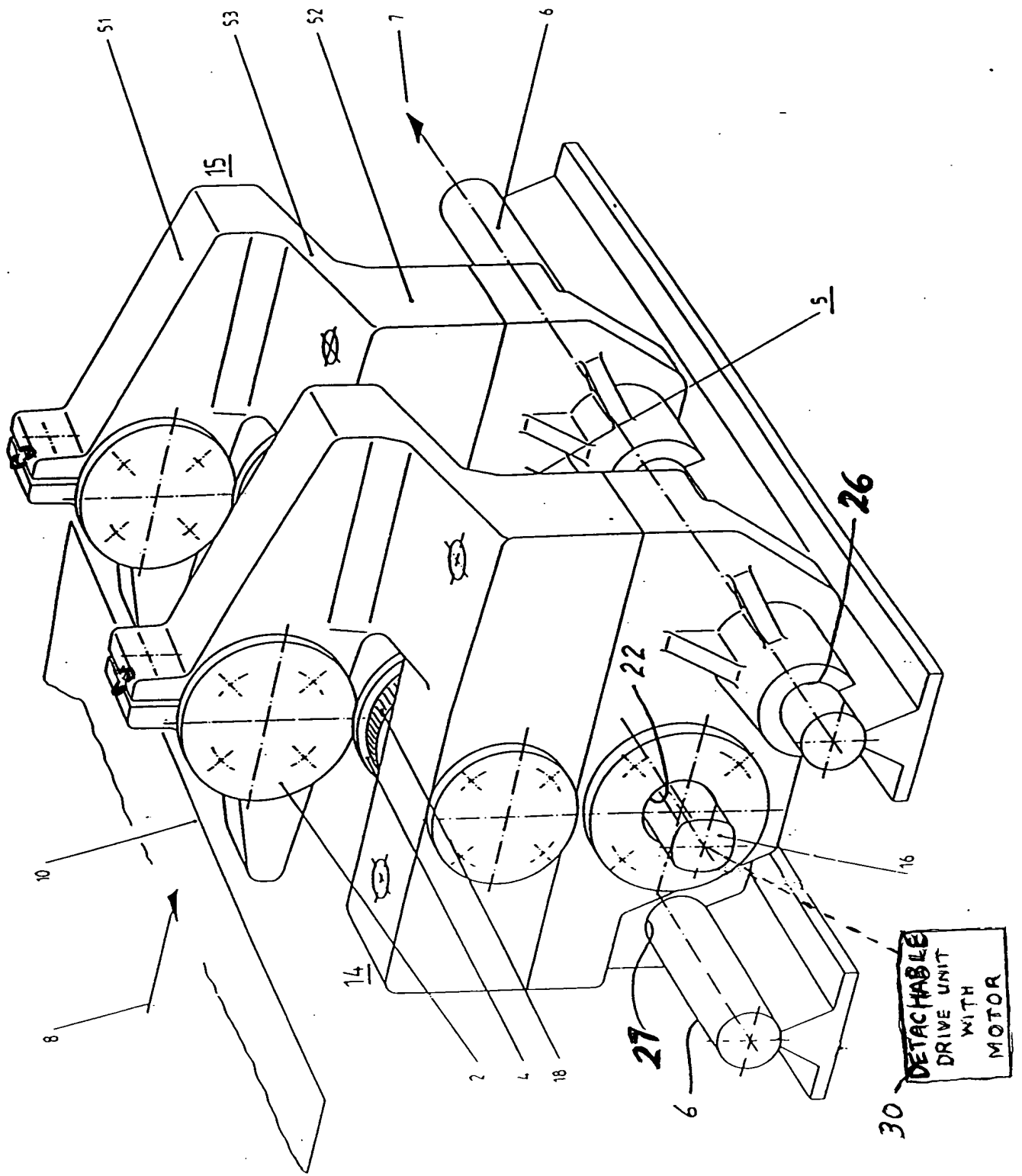




Fig. 2

Do Not Enter. City of 10/2/02

STERN
CITY

Stamps

FOREWORD

There is nothing mysterious about a Stanley car. Its wheels, axles, chassis frame, body, radiator, steering gear, brakes, storage battery and dynamo are similar to other cars. Its power plant and power control are different and are very simple. The power plant consists principally of

A simple two cylinder double acting steam engine, which is attached rigidly to the rear axle, so that the engine and rear axle; in fact, the whole driving mechanism is a unit, attached to the chassis frame at three points.

A boiler which supplies steam to the engine.

A kerosene burner which supplies heat to the boiler.

A set of tanks and pumps which automatically supply water to the boiler, fuel to the burner, and lubricating oil to the engine cylinders.

A set of automatic valves which control the supply of water to the boiler and fuel to the burner.

A radiator which condenses the exhaust steam and returns the water to the water tank.

A storage battery which supplies current for light and for starting the pilot light.

A dynamo which automatically charges the storage battery.

The power control consists of a throttle lever and a reverse pedal.

Mechanical knowledge is not necessary in order to drive a Stanley car successfully, but a thorough understanding of the car will assist one to get the best results under all conditions.

STANLEY MOTOR CARRIAGE CO.,

NEWTON, MASSACHUSETTS

Article 2: To Steam Up (Continued)

See Fig. 3

Open the lower try-cock at the bottom of the water-indicator which is between the boiler and dash on the left side, and see that runs out of it.

If it does, it indicates that the water in the boiler is above this and that is sufficient for steaming up.

More does no harm but will take more time to raise steam.

If no water runs out read Paragraph 3 of Article 4.

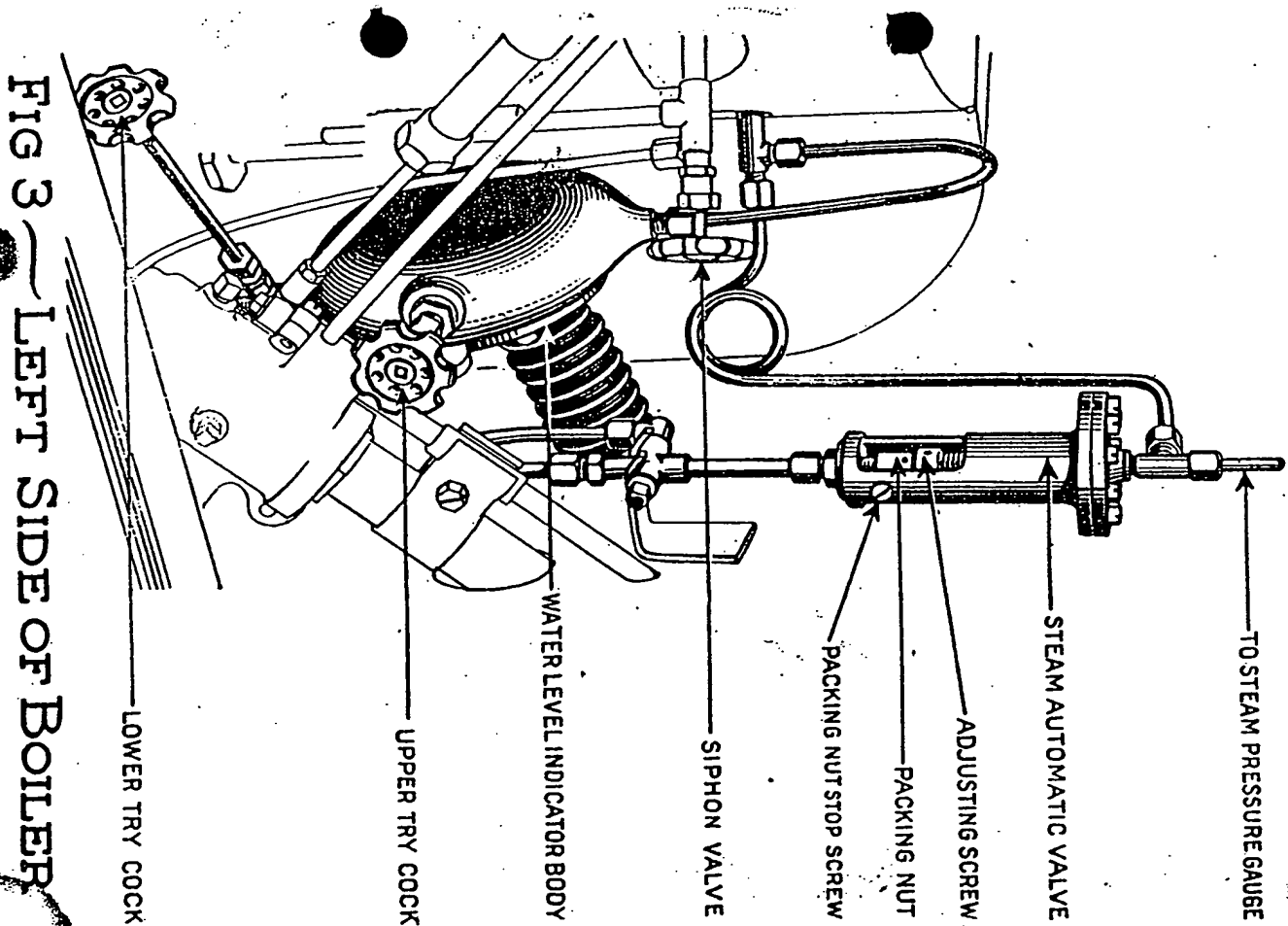


FIG 3 — LEFT SIDE OF BOILER

Repair of the Stanley Steam Automatic

By Ole B. Vikre

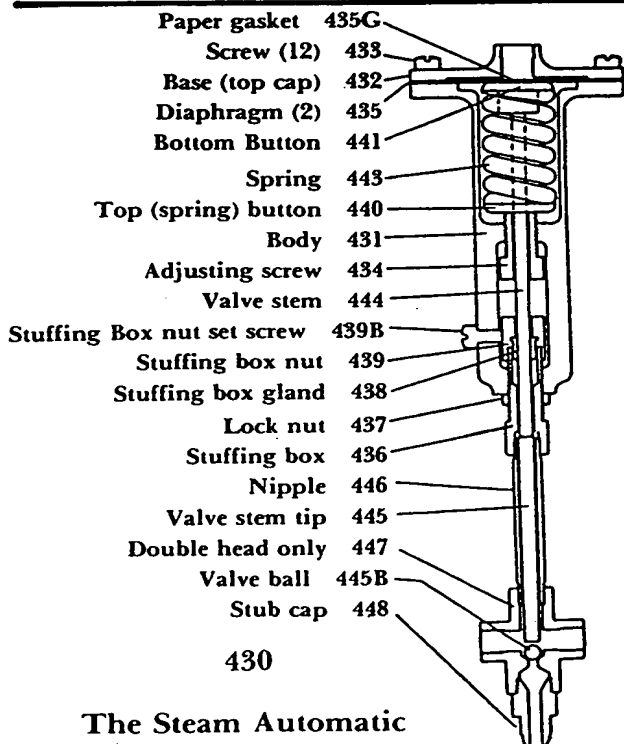
The steam automatic valve, pc. #430 (like the fuel automatic, pc. #460, see STEAM TALK article June 1986, Volume V, Number 1) is a simple diaphragm operated valve, although it works conversely to the fuel automatic.

Clean the parts with pilot fuel, and wire-brush the body, top cap, and double cap (pc. #'s 431, 432 and 447). Then machine the two twelve-hole surfaces by taking a light skim-chip to provide perfectly planed surfaces. Two 0.014" annealed beryllium copper diaphragms and a paper gasket are held between these two surfaces by means of twelve 1/4"-20-NC fillister-head screws 9/16" long.

Machine the seat in the double (or single) head (pc. #'s 442 or 447), after removing the nipple (pc. #446). This is done by turning an adapter in your lathe with a 5/8"-20-NS thread to receive the head. Using a "Letter R" drill (0.339" dia.) ground to 90 degrees included angle, just skim the seat until bright all around. Then, use a flat-bottomed "Letter R" drill to clean the shelf around the seat.

Polish the stem, particularly in way of the packing, using Crocus cloth as the final abrasive.

Assemble the double head, nipple, and stuffing box (pc. #s 447 (or 442), 446 and 436). Screw this assembly onto the same adapter used to machine the seat and ascertain that these three parts are in perfect alignment and run true.



The Steam Automatic

With the stem and ball in place, and before assembling the spring-case portion of the valve, pack the stuffing box.

Run a #16 drill (0.177" dia.) through the six holes in the adjusting screw and the stuffing box nut. Make a pin wrench from a piece of 1/4" drill rod about 3" long, turned down to 0.175" for a distance of 1/4" on one end. Chamfer each end 1/64" x 45 degrees to knock off any sharp edges. Then heat the small end red hot with a torch and quench in cylinder oil. This will toughen the wrench sufficiently to adjust your stuffing box nut and adjusting screw.

Assemble valve. Use Permatex cement on both sides of the paper gasket. Place the gasket against the twelve hole surface of the base, or top cap. Insert two fillister-head screws (180 degrees apart) through the top cap and gasket. Then put the two diaphragms in place. Bring the top cap and the body together and screw the two screws finger tight; then install the remaining ten screws.

Holding the body in a vise (using copper jaws), tighten the twelve screws evenly, using a heavy-duty screw driver and a 6" adjustable wrench. After assembly, bring the adjusting screw (pc. #434) up against the top spring button (pc. #440), and compress the spring about three complete turns.

With the locknut (pc. #437) backed off as far as it will go, tighten the assembly consisting of the stuffing box, nipple, double head, and stub cap (pc. #s 436, 446, 447, and 448) until the stem holds the ball firmly on the seat. Then, back off the assembly 3/4's of a turn and set the lock nut (pc. #437) against the body (pc. #431).

Check the stuffing-box nut and adjust for proper tension. Tighten the stuffing box nut set screw, making sure that there is clearance between the end of the set screw and the stuffing box nut.

Using high pressure air, set the valve to shut off at the desired pressure, usually between 500 and 600 psi. Using the heaviest duty spring in the body should make this valve work with a maximum differential of no more than 25 psi.

If these instructions are followed carefully, this valve should give trouble-free service for many years. □

445 Valve stem tip. Many times the valve stem tip and the valve stem (pc. #'s 445 and 444) are combined into just one stem the diameter of the valve stem.

442 Single head. This fitting, which contains the seat and valve ball (pc. #445B), was available with either one side outlet or two (pc. #447).

449 Wire gauge strainer. Although seldom found, the parts list calls for a strainer which is retained within the single head (pc. #442) or the double head (pc. #'s 447 or 447A) by means of the stub cap (pc. #448).

Stanley Fuel Automatics: A Modification

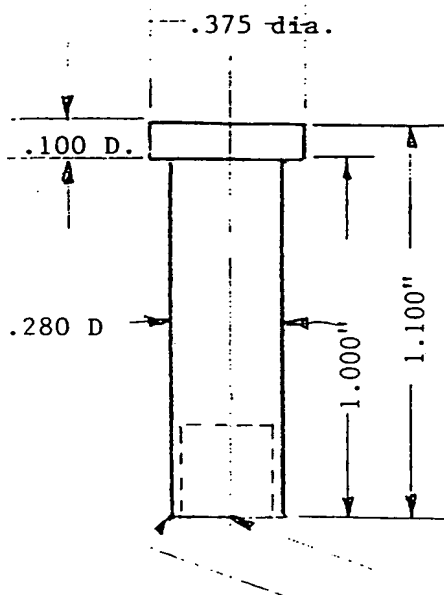
by Ole B. Vikre, Jr.

I first heard about this "fix" several years ago when I asked Ole's son-in-law, Brent Campbell, why he didn't bother to shut his pressure retaining valve when he parked his car for any length. How nice not to lose all your fuel pressure because you forget to shut it at the end of the day! I've been asking Ole for this ever since, so I'm especially happy to present this article now.

The Stanley fuel automatic, part #460 in the Stanley parts catalogue, has been manufactured in three distinct styles:

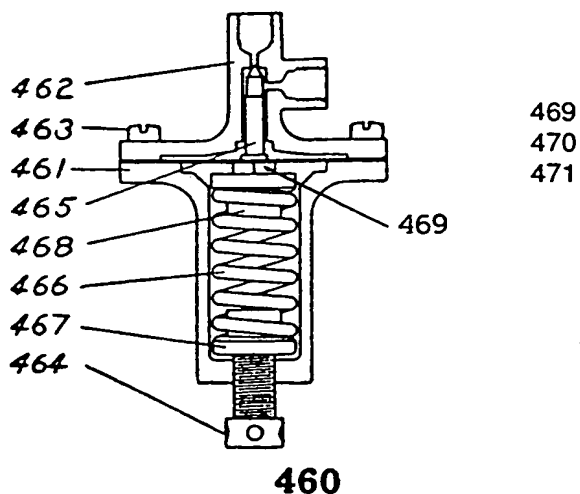
- Exactly as shown in the parts catalogue as #460 — see drawing;
- With the lower spring seat, parts catalogue #468, sitting directly on the diaphragm without the hex nut, #469;
- The style used in the condensing cars, which has an additional part, shown in the

PIECE #1



Cavity 1/4" d. x
1/4" deep for
Nylatron insert.

Swage after
insertion of
Nylatron to
retain. Insert size
1/4" d. x
7/16" long.



article as piece #2, with a 7/16"-20 thread, made completely of 5/8" hex brass. It originally had a hardened steel insert that served as a seat, a spring-loaded needle also made from steel, and used a dimpled diaphragm. The needle, parts catalogue #465, and its mating seat, which was pressed into the 7/16"-20 end of piece #2, were both hardened steel. These pieces soon rusted and otherwise deteriorated, causing leakage.

This "new" modification uses one each of pieces #1, #2 and #3, as shown, plus a gasket and diaphragm (without a hole). It also employs a Nylatron insert (also called molybdenum-filled nylon) 1/4" in diameter x 5/16" long. This insert is placed into the end of piece #1 and swaged in place. After swaging, the end is machined square with the axis of piece #1.

If your fuel automatic is exactly like #460 in the parts catalogue, the area in the way of the pin (or needle) will have to be carefully enlarged to accommodate pieces #1 and #3, finishing the bottom face with a flat-bottomed drill a few thousandths of an inch larger than the o.d. of your small spring, piece #3 (.422-.425").

The next step is to make up a sleeve from scrap brass the same i.d. and o.d. as the small spring, piece #3, but only 7/8" in length. Using this sleeve in place of the small spring, install it along with piece #1 into the valve cavity of parts catalogue #462 which you previously machined with the flat-bottomed drill.

The .375" diameter button on the end of piece #1 and the gasket surface of parts catalogue #642

continued on Page 15

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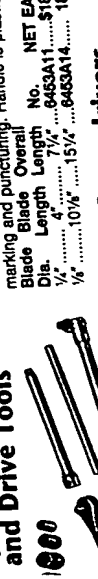
afety Tools

quare-Drive Sockets and Drive Tools



12-POINT BERYLLIUM COPPER DEEP SOCKETS			
Size	Length	No.	NET EACH
1 1/2"	2 1/2"	6490A11	\$1.50
1 3/4"	2 1/2"	6490A12	\$1.50
1 7/8"	2 1/2"	6490A13	\$1.50
2"	2 1/2"	6490A14	\$1.50
2 1/8"	2 1/2"	6490A15	\$1.50
2 1/4"	2 1/2"	6490A16	\$1.50
2 3/8"	2 1/2"	6490A17	\$1.50
2 1/2"	2 1/2"	6490A18	\$1.50
2 5/8"	2 1/2"	6490A19	\$1.50
3"	2 1/2"	6490A20	\$1.50
3 1/8"	2 1/2"	6490A21	\$1.50
3 1/4"	2 1/2"	6490A22	\$1.50
AMPCO METAL DRIVE TOOLS			
Description	Wrench	No.	NET EACH
18" Ratchet Wrench	6490A31	1167.32	\$1.88
17" Extension Bar	6490A32	111.88	
18" Flex Handle	6490A34	198.95	

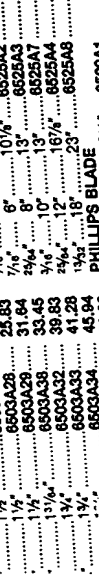
Nonsparking Awls



BERYLLIUM COPPER. Blade is tapered for marking and puncturing. Handle is plastic.

Blade Length	Overall Length	No.	NET EACH
1/2"	4"	6490A11	\$1.32
3/4"	4"	6490A12	\$1.32
1"	4"	6490A13	\$1.32
1 1/4"	4"	6490A14	\$1.32

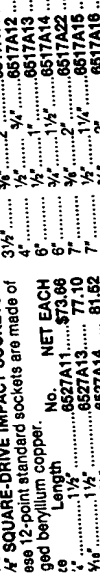
Screwdrivers



BERYLLIUM COPPER. These screwdrivers have round blades and plastic handles.

Tip	Blade Length	Overall Length	No.	NET EACH
1/4"	3"	6490A11	\$9.26	
1/2"	3"	6490A12	\$9.26	
3/8"	3"	6490A13	\$9.26	
1/2"	3"	6490A14	\$9.26	
5/8"	3"	6490A15	\$9.26	
1"	3"	6490A16	\$9.26	
1 1/4"	3"	6490A17	\$9.26	
1 1/2"	3"	6490A18	\$9.26	
1 3/4"	3"	6490A19	\$9.26	
2"	3"	6490A20	\$9.26	
2 1/4"	3"	6490A21	\$9.26	
2 1/2"	3"	6490A22	\$9.26	

Flange Wedges



1/8"	1 3/4"	6527A16	90.85	7"	3/4"	2"	6517A19
1/4"	1 3/4"	6527A16	90.85	7 1/4"	3/4"	2"	6517A19
1/2"	1 3/4"	6527A16	90.85	7 1/2"	3/4"	2"	6517A19
3/4"	1 3/4"	6527A16	90.85	7 3/4"	3/4"	2"	6517A19
1"	1 3/4"	6527A16	90.85	8"	3/4"	2"	6517A19
1 1/8"	1 3/4"	6527A16	90.85	8 1/4"	3/4"	2"	6517A19
1 1/4"	1 3/4"	6527A16	90.85	8 1/2"	3/4"	2"	6517A19
1 1/2"	1 3/4"	6527A16	90.85	8 3/4"	3/4"	2"	6517A19
1 3/4"	1 3/4"	6527A16	90.85	9"	3/4"	2"	6517A19
2"	1 3/4"	6527A16	90.85	9 1/4"	3/4"	2"	6517A19
2 1/4"	1 3/4"	6527A16	90.85	9 1/2"	3/4"	2"	6517A19
2 1/2"	1 3/4"	6527A16	90.85	9 3/4"	3/4"	2"	6517A19
2 3/4"	1 3/4"	6527A16	90.85	10"	3/4"	2"	6517A19
3"	1 3/4"	6527A16	90.85	10 1/4"	3/4"	2"	6517A19
3 1/4"	1 3/4"	6527A16	90.85	10 1/2"	3/4"	2"	6517A19
3 1/2"	1 3/4"	6527A16	90.85	10 3/4"	3/4"	2"	6517A19
3 3/4"	1 3/4"	6527A16	90.85	11"	3/4"	2"	6517A19
4"	1 3/4"	6527A16	90.85	11 1/4"	3/4"	2"	6517A19
4 1/4"	1 3/4"	6527A16	90.85	11 1/2"	3/4"	2"	6517A19
4 1/2"	1 3/4"	6527A16	90.85	11 3/4"	3/4"	2"	6517A19
4 3/4"	1 3/4"	6527A16	90.85	12"	3/4"	2"	6517A19
5"	1 3/4"	6527A16	90.85	12 1/4"	3/4"	2"	6517A19
5 1/4"	1 3/4"	6527A16	90.85	12 1/2"	3/4"	2"	6517A19
5 1/2"	1 3/4"	6527A16	90.85	12 3/4"	3/4"	2"	6517A19
5 3/4"	1 3/4"	6527A16	90.85	13"	3/4"	2"	6517A19
6"	1 3/4"	6527A16	90.85	13 1/4"	3/4"	2"	6517A19
6 1/4"	1 3/4"	6527A16	90.85	13 1/2"	3/4"	2"	6517A19
6 1/2"	1 3/4"	6527A16	90.85	13 3/4"	3/4"	2"	6517A19
6 3/4"	1 3/4"	6527A16	90.85	14"	3/4"	2"	6517A19
7"	1 3/4"	6527A16	90.85	14 1/4"	3/4"	2"	6517A19
7 1/4"	1 3/4"	6527A16	90.85	14 1/2"	3/4"	2"	6517A19
7 1/2"	1 3/4"	6527A16	90.85	14 3/4"	3/4"	2"	6517A19
7 3/4"	1 3/4"	6527A16	90.85	15"	3/4"	2"	6517A19
8"	1 3/4"	6527A16	90.85	15 1/4"	3/4"	2"	6517A19
8 1/4"	1 3/4"	6527A16	90.85	15 1/2"	3/4"	2"	6517A19
8 1/2"	1 3/4"	6527A16	90.85	15 3/4"	3/4"	2"	6517A19
8 3/4"	1 3/4"	6527A16	90.85	16"	3/4"	2"	6517A19
9"	1 3/4"	6527A16	90.85	16 1/4"	3/4"	2"	6517A19
9 1/4"	1 3/4"	6527A16	90.85	16 1/2"	3/4"	2"	6517A19
9 1/2"	1 3/4"	6527A16	90.85	16 3/4"	3/4"	2"	6517A19
9 3/4"	1 3/4"	6527A16	90.85	17"	3/4"	2"	6517A19
10"	1 3/4"	6527A16	90.85	17 1/4"	3/4"	2"	6517A19
10 1/4"	1 3/4"	6527A16	90.85	17 1/2"	3/4"	2"	6517A19
10 1/2"	1 3/4"	6527A16	90.85	17 3/4"	3/4"	2"	6517A19
10 3/4"	1 3/4"	6527A16	90.85	18"	3/4"	2"	6517A19
11"	1 3/4"	6527A16	90.85	18 1/4"	3/4"	2"	6517A19
11 1/4"	1 3/4"	6527A16	90.85	18 1/2"	3/4"	2"	6517A19
11 1/2"	1 3/4"	6527A16	90.85	18 3/4"	3/4"	2"	6517A19
11 3/4"	1 3/4"	6527A16	90.85	19"	3/4"	2"	6517A19
12"	1 3/4"	6527A16	90.85	19 1/4"	3/4"	2"	6517A19
12 1/4"	1 3/4"	6527A16	90.85	19 1/2"	3/4"	2"	6517A19
12 1/2"	1 3/4"	6527A16	90.85	19 3/4"	3/4"	2"	6517A19
12 3/4"	1 3/4"	6527A16	90.85	20"	3/4"	2"	6517A19
13"	1 3/4"	6527A16	90.85	20 1/4"	3/4"	2"	6517A19
13 1/4"	1 3/4"	6527A16	90.85	20 1/2"	3/4"	2"	6517A19
13 1/2"	1 3/4"	6527A16	90.85	20 3/4"	3/4"	2"	6517A19
13 3/4"	1 3/4"	6527A16	90.85	21"	3/4"	2"	6517A19
14"	1 3/4"	6527A16	90.85	21 1/4"	3/4"	2"	6517A19
14 1/4"	1 3/4"	6527A16	90.85	21 1/2"	3/4"	2"	6517A19
14 1/2"	1 3/4"	6527A16	90.85	21 3/4"	3/4"	2"	6517A19
14 3/4"	1 3/4"	6527A16	90.85	22"	3/4"	2"	6517A19
15"	1 3/4"	6527A16	90.85	22 1/4"	3/4"	2"	6517A19
15 1/4"	1 3/4"	6527A16	90.85	22 1/2"	3/4"	2"	6517A19
15 1/2"	1 3/4"	6527A16	90.85	22 3/4"	3/4"	2"	6517A19
15 3/4"	1 3/4"	6527A16	90.85	23"	3/4"	2"	6517A19
16"	1 3/4"	6527A16	90.85	23 1/4"	3/4"	2"	6517A19
16 1/4"	1 3/4"	6527A16	90.85	23 1/2"	3/4"	2"	6517A19
16 1/2"	1 3/4"	6527A16	90.85	23 3/4"	3/4"	2"	6517A19
16 3/4"	1 3/4"	6527A16	90.85	24"	3/4"	2"	6517A19
17"	1 3/4"	6527A16	90.85	24 1/4"	3/4"	2"	6517A19
17 1/4"	1 3/4"	6527A16	90.85	24 1/2"	3/4"	2"	6517A19
17 1/2"	1 3/4"	6527A16	90.85	24 3/4"	3/4"	2"	6517A19
17 3/4"	1 3/4"	6527A16	90.85	25"	3/4"	2"	6517A19
18"	1 3/4"	6527A16	90.85	25 1/4"	3/4"	2"	6517A19
18 1/4"	1 3/4"	6527A16	90.85	25 1/2"	3/4"	2"	6517A19
18 1/2"	1 3/4"	6527A16	90.85	25 3/4"	3/4"	2"	6517A19
18 3/4"	1 3/4"	6527A16	90.85	26"	3/4"	2"	6517A19
19"	1 3/4"	6527A16	90.85	26 1/4"	3/4"	2"	6517A19
19 1/4"	1 3/4"	6527A16	90.85	26 1/2"	3/4"	2"	6517A19
19 1/2"	1 3/4"	6527A16	90.85	26 3/4"	3/4"	2"	6517A19
19 3/4"	1 3/4"	6527A16	90.85	27"	3/4"	2"	6517A19
20"	1 3/4"	6527A16	90.85	27 1/4"	3/4"	2"	6517A19
20 1/4"	1 3/4"	6527A16	90.85	27 1/2"	3/4"	2"	6517A19
20 1/2"	1 3/4"	6527A16	90.85	27 3/4"	3/4"	2"	6517A19
20 3/4"	1 3/4"	6527A16	90.85	28"	3/4"	2"	6517A19
21"	1 3/4"	6527A16	90.85	28 1/4"	3/4"	2"	6517A19
21 1/4"	1 3/4"	6527A16	90.85	28 1/2"	3/4"	2"	6517A19
21 1/2"	1 3/4"	6527A16	90.85	28 3/4"	3/4"	2"	6517A19
21 3/4"	1 3/4"	6527A16	90.85	29"	3/4"	2"	6517A19
22"	1 3/4"	6527A16	90.85	29 1/4"	3/4"	2"	6517A19
22 1/4"	1 3/4"	6527A16	90.85	29 1/2"	3/4"	2"	6517A19
22 1/2"	1 3/4"	6527A16	90.85	29 3/4"	3/4"	2"	6517A19
22 3/4"	1 3/4"	6527A16	90.85	30"	3/4"	2"	6517A19
23"	1 3/4"	6527A16	90.85	30 1/4"	3/4"	2"	6517A19
23 1/4"	1 3/4"	6527A16	90.85	30 1/2"	3/4"	2"	6517A19
23 1/2"	1 3/4"	6527A16	90.85	30 3/4"	3/4"	2"	6517A19
23 3/4"	1 3/4"	6527A16	90.85	31"	3/4"	2"	6517A19
24"	1 3/4"	6527A16	90.85	31 1/4"	3/4"	2"	6517A19
24 1/4"	1 3/4"	6527A16	90.85	31 1/2"	3/4"	2"	6517A19
24 1/2"	1 3/4"	6527A16	90.85	31 3/4"	3/4"	2"	6517A19
24 3/4"	1 3/4"	6527A16	90.85	32"	3/4"	2"	6517A19
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25 3/4"	1 3/4"	6527A16	90.85	33"	3/4"	2"	6517A19
26"	1 3/4"	6527A16	90.85	33 1/4"	3/4"	2"	6517A19
26 1/4"	1 3/4"	6527A16	90.85	33 1/2"	3/4"	2"	6517A19
26 1/2"	1 3/4"	6527A16	90.85	33 3/4"	3/4"	2"	6517A19
26 3/4"	1 3/4"	6527A16	90.85	34"	3/4"	2"	6517A19
27"	1 3/4"	6527A16	90.85	34 1/4"	3/4"	2"	6517A19
27 1/4"	1 3/4"	6527A16	90.85	34 1/2"	3/4"	2"	6517A19
27 1/2"	1 3/4"	6527A16	90.85	34 3/4"	3/4"	2"	6517A19
27 3/4"	1 3/4"	6527A16	90.85	35"	3/4"	2"	6517A19
28"	1 3/4"	6527A16	90.85	35 1/4"	3/4"	2"	6517A19
28 1/4"	1 3/4"	6527A16	90.85	35 1/2"	3/4"	2"	6517A19
28 1/2"	1 3/4"	6527A16	90.85	35 3/4"	3/4"	2"	6517A19
28 3/4"	1 3/4"	6527A16	90.85	36"	3/4"	2"	6517A19
29"	1 3/4"	6527A16	90.85	36 1/4"	3/4"	2"	6517A19
29 1/4"	1 3/4"	6527A16	90.85	36 1/2"	3/4"	2"	6517A19
29 1/2"	1 3/4"	6527A16	90.85	36 3/4"	3/4"	2"	6517A19
29 3/4"	1 3/4"	6527A16	90.85	37"	3/4"	2"	6517A19
30"	1 3/4"	6527A16	90.85	37 1/4"	3/4"	2"	6517A19
30 1/4"	1 3/4"	6527A16	90.85	37 1/2"	3/4"	2"	6517A19
30 1/2"	1 3/4"	6527A16	90.85	37 3/4"	3/4"	2"	6517A19
30 3/4"	1 3/4"	6527A16	90.85	38"	3/4"	2"	6517A19
31"	1 3/4"	6527A16	90.85	38 1/4"	3/4"	2"	6517A19
31 1/4"	1 3/4"	6527A16	90.85	38 1/2"	3/4"	2"	6517A19
31 1/2"	1 3/4"	6527A16	90.85	38 3/4"	3/4"	2"	6517A19
31 3/4"	1 3/4"	6527A16	90.85	39"	3/4"	2"	6517A19
32"	1 3/4"	6527A16	90.85	39 1/4"	3/4"	2"	6517A19
32 1/4"	1 3/4"	6527A16	90.85	39 1/2"	3/4"	2"	6517A19
32 1/2"	1 3/4"	6527A16	90.85	39 3/4"	3/4"	2"	6517A19
32 3/4"	1 3/4"	6527A16	90.85	40"	3/4"	2"	6517A19
33"	1 3/4"	6527A16	90.85	40 1/4"	3/4"	2"	6517A19
33 1/4"	1 3/4"	6527A16	90.85	40 1/2"	3/4"	2"	6517A19
33 1/2"	1 3/4"	6527A16	90.85	40 3/4"	3/4"	2"	6517A19
33 3/4"	1 3/4"	6527A16	90.85	41"	3/4"	2"	6517A19
34"	1 3/4"	6527A16	90.85	41 1/4"	3/4"	2"	6517A19
34 1/4"	1 3/4"	6527A16	90.85	41 1/2"	3/4"	2"	6517A19
34 1/2"	1 3/4"	6527A16	90.85	41 3/4"	3/4"	2"	6517A19
34 3/4"	1 3/4"	6527A16	90.85	42"	3/4"	2"	6517A19
35"	1 3/4"	6527A16	90.85	42 1/4"	3/4"	2"	6517A19
35 1/4"	1 3/4"	6527A16	90.85	42 1/2"	3/4"	2"	6517A19
35 1/2"	1 3/4"	6527A16	90.85	42 3/4"	3/4"	2"	6517A19
35 3/4"	1 3/4"	6527A16	90.85	43"	3/4"	2"	6517A19
36"	1 3/4"	6527A16	90.85	43 1/4"	3/4"	2"	6517A19
36 1/4"	1 3/4"	6527A16	90.85	43 1/2"	3/4"	2"	6517A19
36 1/2"	1 3/4"	6527A16	90.85	43 3/4"	3/4"	2"	6517A19
36 3/4"	1 3/4"	6527A16	90.85	44"	3/4"	2"	6517A19
37"	1 3/4"	6527A16	90.85	44 1/4"	3/4"	2"	6517A19
37 1/4"	1 3/4"	6527A16	90.85	44 1/2"	3/4"	2"	6517A19
37 1/2"	1 3/4"	6527A16	90.85	44 3/4"	3		

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TTY for the Hearing Impaired:

Fax

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Z-88 LUBRICANTS.....684
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Before using, the user must determine the use for its intended use, and the user assumes all risk.

with. Neither we nor the manufacturer know the use to which the user will put the product.

**O.S.H.A. To the best of our knowledge, our
with Federal Occupational Safety and Health Act**

dards of items shown in this catalog as meeting standards. In view of the fact that the actual use of

NCHA requirements have been met, the ultra-